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Listing of Claims

Please cancel claims 23-58, and add new claims 59-73, as follows:

Claims 1-58. (Canceled).

59. (New) Apparatus comprising:

a printed circuit board having in at least one first region a plurality of component contacts configured to receive electronic components;

a plurality of electrically conductive traces formed on the printed circuit board, each of a selected number of the traces being electrically connected to a corresponding one of the component contacts and extending from the at least one first region to at least one second region of the printed circuit board; and

at least one programmable integrated circuit mounted on the at least one second region and containing a plurality of conductive leads, the at least one programmable integrated circuit being programmable by a user to interconnect selected electrically conductive traces on the printed circuit board to achieve a desired electrical function from the electronic components,

wherein each of the conductive leads is electrically connected to a corresponding one of the electrically conductive traces formed on the printed circuit board to form an electrically conductive path from each of the component contacts to the corresponding conductive lead of the at least one programmable integrated circuit, and

wherein the printed circuit board, the selected number of conductive traces, and the component contacts have a standard configuration independent of the electronic components and the electrical function to be implemented by the electronic components when selectively interconnected by the at least one programmable integrated circuit.

60. (New) The apparatus of claim 59, wherein the printed circuit board contains more than one layer of conductive traces.

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61. (New) The apparatus of claim 59, wherein at least some of the plurality of component contacts comprise a plurality of holes in the printed circuit board, each hole being appropriate for receipt of a conductive lead of an electronic component.

62. (New) The apparatus of claim 61, wherein the interior surface of each hole is plated with a conductive material.

63. (New) The apparatus of claim 62, wherein the conductive material on the interior of each hole is electrically connected to a corresponding one of the electrically conductive traces.

64. (New) The apparatus of claim 59, further including the electronic components mounted on the printed circuit board, each of the electronic components having at least two electrical leads, each electrical lead of the electronic components making contact with a corresponding one of the component contacts.

65. (New) The apparatus of claim 59, wherein at least some of the component contacts on the printed circuit board comprise pads, each pad being connected to a corresponding one of the plurality of electrically conductive traces formed on the printed circuit board.

66. (New) The apparatus of claim 65, wherein each pad is connected by a conductive lead to a hole formed through the printed circuit board, the hole being plated on its interior surface with a conductive material and the hole being in electrical contact with a corresponding one of the electrically conductive traces formed on the printed circuit board.

67. (New) Apparatus comprising:
a printed circuit board;
a plurality of first electrical contacts formed in the printed circuit board configured to receive leads of electronic components to be mounted on the printed circuit board;
a corresponding plurality of second electrical contacts formed in a selected region of the printed circuit board;

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conductive traces formed on the printed circuit board, each of a selected number of the conductive traces uniquely interconnecting one of the first electrical contacts to a corresponding one of the second electrical contacts; and

at least one programmable integrated circuit chip mounted on the printed circuit board, selected ones of the second electrical contacts receiving leads from the at least one programmable integrated circuit chip thereby to enable a user to programmably interconnect selected ones of the first electrical contacts so as to configure the electronic components to be mounted on the printed circuit board into a selected electrical circuit,

wherein the printed circuit board, the selected number of conductive traces, and the first and second electrical contacts have a standard configuration independent of the electronic components to be mounted on the printed circuit board.

68. (New) The apparatus of claim 67, further including means for determining a state of the at least one programmable integrated circuit chip and for determining a state of the signals on the conductive traces.

69. (New) The apparatus of claim 68, further including means for transmitting control signals to the at least one integrated circuit chip and for controlling a configuration of the at least one integrated circuit chip so as to control interconnection of the conductive traces formed on the printed circuit board.

70. (New) The apparatus of claim 67, wherein the printed circuit board comprises:
a first portion thereof containing the conductive traces for interconnecting the electronic components without use of a programmable integrated circuit; and
a second portion thereof containing the at least one programmable integrated circuit chip for interconnecting the electronic components formed on the second portion of the printed circuit board.

71. (New) Apparatus comprising:
a printed circuit board;

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a plurality of component holes configured to receive leads of electronic components;

a corresponding plurality of PIC holes;

one or more layers of conductive traces formed on the printed circuit board, each of a selected number of the conductive traces uniquely connecting at least one of the component holes to at least one of the PIC holes; and

one or more programmable interconnect chips mounted on the printed circuit board, selected ones of the PIC holes receiving leads from the one or more programmable interconnect chips to enable a user to programmably interconnect the electronic components into a desired electrical circuit,

wherein the printed circuit board, the selected number of conductive traces, and the component and PIC holes have a standard configuration independent of the electronic components to be mounted on the printed circuit board.

72. (New) The apparatus of claim 71, wherein the printed circuit board comprises:

a first portion thereof containing the conductive traces for interconnecting the electronic components without the use of a programmable integrated circuit; and

a second portion thereof containing at least one programmable integrated circuit for interconnecting the electronic components formed on the second portion of the printed circuit board.

73. (New) A method for configuring an electronic system on a printed circuit board, comprising:

creating a model of the programmable printed circuit board having a plurality of component contacts for receipt of leads of electronic components to be mounted on the printed circuit board and a corresponding plurality of PIC contacts for receipt of the leads of one or more programmable interconnect chips, the one or more programmable interconnect chips being programmable by a user of the printed circuit board so as to interconnect electronic components and conductive traces so as to form the electronic system, a selected number of conductive traces each connecting at least one component contact to at least one PIC contact;

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simulating a placement and routing of the electronic components on the component contacts;

simulating an interconnection of the electronic components by simulating a configuration of the one or more programmable interconnect chips to achieve such interconnection;

simulating an electrical performance of the electronic system with the electronic components interconnected by the programmable interconnect chip;

determining a system performance and a system characteristic with the electronic components so interconnected as a result of simulating the system so interconnected; and

repeating the above steps making changes in placement of electronic components as indicated in accordance with results of the simulation until the above steps yield an electronic system having a desired characteristic.